



WatchBP[®] home ^N

**Accurate home and
nocturnal blood pressure
measurements
with the WatchBP Home N.**

Instruction Manual



EN → 1

microlife[®]

Microlife WatchBP Home N is the device designed to measure daily and nocturnal blood pressure. It strictly follows European Society of Hypertension (ESH)^{1,2} and American Heart Association (AHA)³ recommendations of 7-day home measurement period with two measurements in the morning and two in the evening. Using the WatchBP Home N device helps you collect accurate diurnal and nocturnal blood pressure measurements. This gives a good insight in your daily blood pressure pattern and therefore provides valuable information to your doctor. The WatchBP Home N device has been clinically validated according to the ESH protocol⁴.

¹ O'Brien E, Asmar R, Beilin L, Imai Y, *et al.* European Society of Hypertension recommendations for conventional, ambulatory and home blood pressure measurement. European Society of Hypertension Working Group on Blood Pressure Monitoring. *J Hypertens* 2003;21:821-848.

² Stergiou GS, *et al.* A tool for reliable self-home blood pressure monitoring designed according to the European Society of Hypertension recommendations: The Microlife WatchBP Home monitor. *Blood press Monit.* 2007;12:127-131.

³ Thomas G. Pickering, Nancy Houston Miller, Gbenga Ogedegbe, Lawrence R. Krakoff, Nancy T. Artinian and David Goff. Call to Action on Use and Reimbursement for Home Blood Pressure Monitoring: Executive Summary: A Joint Scientific Statement From the American Heart Association, American Society of Hypertension, and Preventive Cardiovascular Nurses Association. *Hypertension* 2008;52;1-9

⁴ Stergiou GS, Giovas PP, Gkinos CP, Patouras JD. Validation of the Microlife WatchBP Home device for self home blood pressure measurement according to The International Protocol. *Blood Press Monit.* 2007;12(3):185-188.

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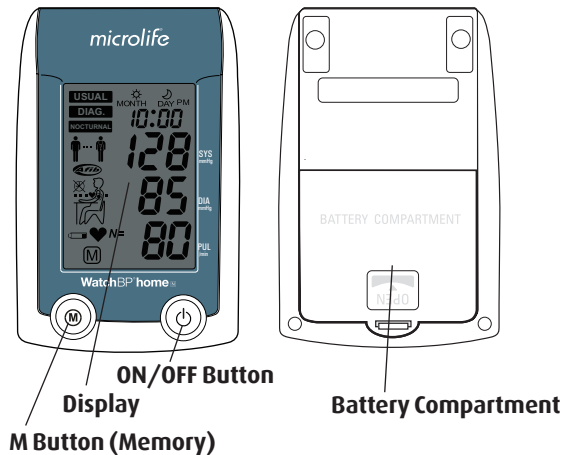
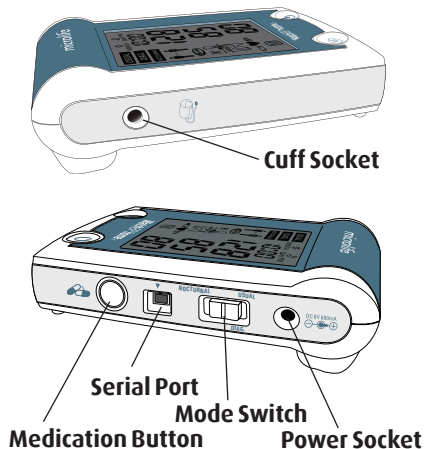
Viewing, deleting, and transferring measurement values

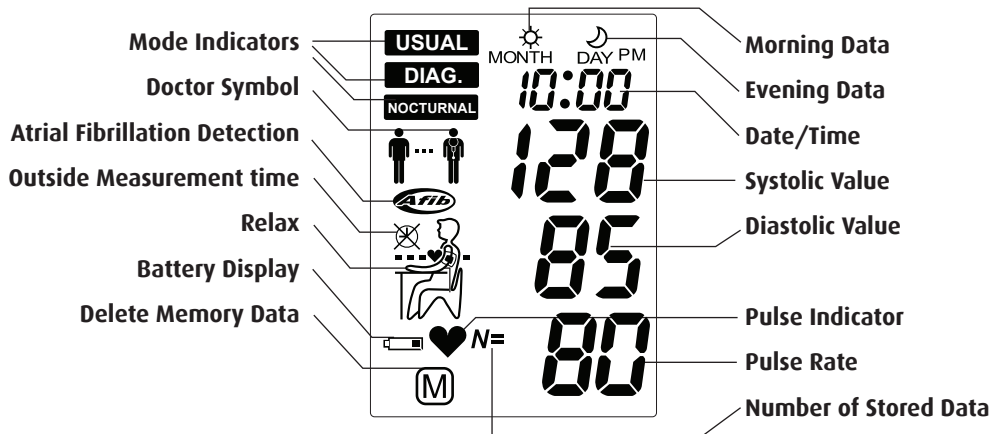
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WatchBP[®] home_N

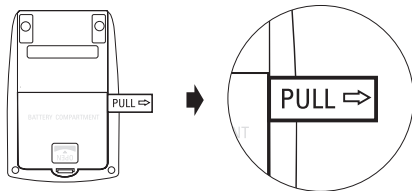




Before using WatchBP Home N for the first time

Activating the Device

Pull out the protective strip from the battery compartment to activate the device.



1) **Set the year** – Upon removing the protective strip or installing new batteries, the year number flashes in the display. Use the M button to select the year. Press the ON/OFF button to confirm the selection.



Press M button to select.

Press ON/OFF button to confirm.



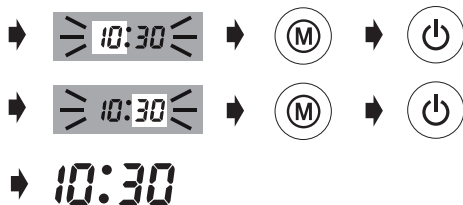
2) **Set the month** – Press the M button to select the month. Press the ON/OFF button to confirm.



3) **Set the day** – Press the M button to select the day. Press the ON/OFF button to confirm.



- 4) **Set the time** – Press the M Button to select the time. Press the ON/OFF button to confirm. When the date and time are set, the current time is displayed.



- 5) If you want to change the date and time, take out one battery from the battery compartment briefly and press ON/OFF button to turn off the device; then put it back. The year number will flash. Complete the process as described above.

Selecting the correct cuff

The WatchBP Home N device is available with different cuff sizes. If the cuff provided with the device is not the correct size, please consult your doctor.

❖ *please use only Microlife cuffs!*



M (Medium size)

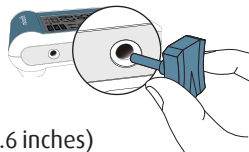
22 - 32 cm (8.7 - 12.6 inches)

M is the correct size for most people.



L (Large size)

32 - 42 cm (12.6 - 16.5 inches)



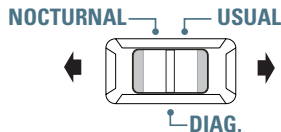
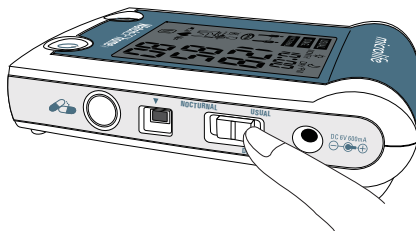
Taking measurements using WatchBP Home N

Prior to each measurement, use the Mode Switch on the right side of the device to select the proper measurement mode. There are three modes to be selected:

«**USUAL**» (Usual) mode,
for a regular single measurement.

«**DIAG.**» (Diagnostic),
7-day measurement session for diagnosis or follow-up.

«**NOCTURNAL**» (Nocturnal) mode
for measurements of blood pressure during sleep.
The user should be lying supine in bed when this mode
is selected.



❖ *The time of taking medication can be recorded in any modes.*

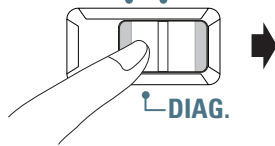
«USUAL» Mode

In «**USUAL**» mode, single measurements can be taken at any time, and the measurement values are automatically stored for later evaluation by your doctor



Anytime

NOCTURNAL — — — USUAL

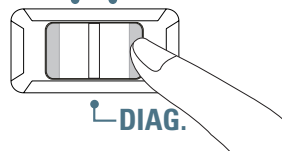


«DIAG.» Mode

The «**DIAG.**» mode should be selected as requested. The blood pressure can only be measured in accordance to the 7-day measurement schedule as prescribed by the European Society of Hypertension (ESH).



NOCTURNAL — — — USUAL



Taking measurements using WatchBP Home N (cont.)

Take measurements on 7 consecutive days

In «**DIAG.**» mode, blood pressure measurements are taken **on 7 consecutive days**. ESH¹ and AHA² recommend to take a 7-day measurement period with 2 measurements in the morning and 2 measurements in the evening to get an average of at least 12 morning and evening measurements for reference. The first-day measurements shall be excluded from the analysis.



7 consecutive days

Two sets of measurements per day

ESH guidelines recommend one double measurement to be taken in the morning between 06:00 - 09:00 and one in the evening between 18:00 - 21:00. **Always take the measurements before taking your medication, unless otherwise directed by your doctor.**



ESH Guidelines

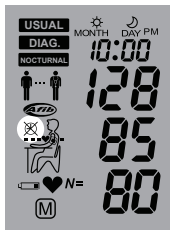
¹ Gianfranco Paratia, *et al.* European Society of Hypertension guidelines for blood pressure monitoring at home. *J Hypertens* 2008 26:1505–1530.

² Thomas G. Pickering, *et al.* Call to Action on Use and Reimbursement for Home Blood Pressure Monitoring. *Hypertension* 2008;52;1-9

However, for user's convenience, WatchBP Home N has an extended measurement period and allows morning measurements between 04:00 - 12:00 and evening measurements between 18:00 - 24:00.



Extended Time



If it is not in the measuring time period, the symbol will be displayed and the measurements can not be taken.

Evaluation

After measurements have been carried out for a total of 7 working days, bring the device to your doctor for evaluation of your home blood pressure.

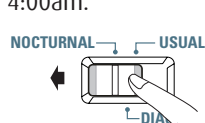


When measurements have been carried out for the full 7 days, the doctor symbol will flash on the screen.

Taking measurements using WatchBP Home N (cont.)

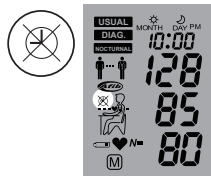
«NOCTURNAL» Mode

The «**NOCTURNAL**» mode enables to measure and record blood pressures during sleep time. It can be used when requested by your doctor. The starting time of «**NOCTURNAL**» mode is restricted between 6:00pm and 4:00am.



❖ Please lie supine when «**NOCTURNAL**» mode is selected. "Supine" means lying on the back or having the face upward.

❖ If it is not in the allowed measuring time, the symbol will be displayed and the measurements can not be taken



Three measurements during sleep time

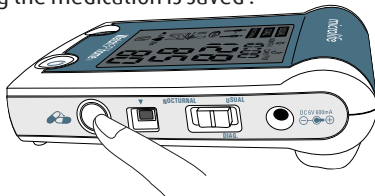
Select «**NOCTURNAL**» mode while you are going to sleep. Please lie supine in bed then press the start button for 3 seconds. The device will take one measurement automatically as baseline to activate the nocturnal measurements. It will take the first measurement two hours later; the second measurement one hour after the first measurement; and the third measurement one hour after the second measurement. The values of 1st, 2nd and 3rd measurement will be averaged. The baseline readings will not be counted in as average.



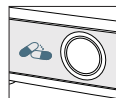
Recording medication intake

The patient can record the time of taking the medicine by pressing the Medication Button.

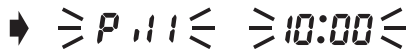
- 1) Press and hold the Medication Button, the pill icon will flash. Hold until beep sounds then release it. The Pill icon and the number of records appear.
- 2) The Pill icon will flash in alternation with the recorded time of taking the medicine.
- 3) The time of taking the medication is saved.



❖ The device saves only the time of taking the medicine, not the pill's name or dosage.



Press and hold until beep...

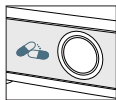


Saved

❖ The time of taking medication can be recorded in any modes.

Delete stored medication records

To clear the memory of all medication records, press and hold the Medication button for 7 seconds until the "CL" symbol flashes. Then press M to delete the memory or ON/OFF to cancel the deletion.



➡ Press and hold for 7 seconds...

➡ ≧CL≦ ➡



Pill indicator

Due to technical limitation, the character "i" of the word "pill" is displayed without the "dot" in the "i".



➡ ≧P.11≦

※ ≧P.11≦ indicates the word "pill"

※ Pressing the M Button to delete data will erase all medication record data in the different mode.

Measurements stored automatically

In «USUAL» mode

250 measurements can be stored

❖ When the memory of the device is full, each new measurement will automatically overwrite the first measurement.

In «DIAG» mode

28 measurements can be stored



«USUAL» mode



«DIAG» mode

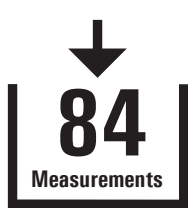
In «NOCTURNAL» mode

84 measurements can be stored

❖ Up to 21 cycles of nocturnal measurements can be stored.

50 medication records can be stored

❖ When the memory is full, the device will display "Full".



«NOCTURNAL» mode



Medication

Eight steps for taking proper blood pressure

Step 1

Avoid taking measurements directly after eating, drinking, or smoking. Allow at least one hour between these activities and measurement of your blood pressure.



**1 Hour
Before**

Step 2

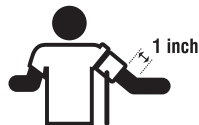
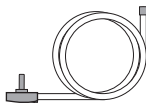
In «USUAL» and «DIAG.» mode

Prepare a chair and table for the measurement. The chair should have a vertical back-rest and the table should allow your upper arm to rest at the same height as your heart.



Step 3

Remove all clothing constricting the arm to be measured. Connect the shorter tube to the cuff then apply the cuff. Make sure the lower edge of the cuff is exactly 2–3 cm from the inner fold of your arm. The tube connecting the cuff to the device should be placed on the inside of the arm. *(Additional visual instruction can be found on the cuff)*



- ❖ Shorter tube (20 inches) for «USUAL» and «DIAG.» mode.
- ❖ Avoid rolling up long sleeves, as this may lead to constriction of blood flow to the measurement arm.

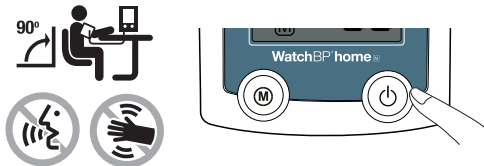
Step 4

Sit down and relax for at least five minutes prior to the measurement.



Step 5

Sit upright and lean comfortably against the chair's backrest. Press the start button, and the device will start to measure. During the measurement do not move, cross your legs, or tense your arm muscles. Breathe normally and do not talk.



Step 6

When the measurement is complete, the readings are stored for future reference by your doctor. If an error displays after the readings, please repeat the measurement procedure from step 1 to 5.

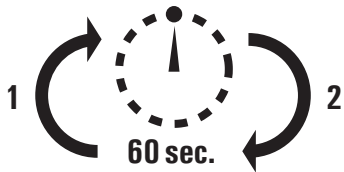


Automatically stored

Eight steps for taking proper blood pressure (cont.)

Step 7 (in «DIAG.» mode)

In «**DIAG.**» mode, there is a 60 seconds countdown before the measurement starts. Two measurements will be performed subsequently. After the first measurement, another 60 seconds countdown starts before the second measurement. Be relaxed and do not move during the countdown.



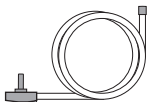
Step 8 (in «DIAG.» mode)

When seven days of measurements have been collected, the Doctor Symbol will flash on the display. Do not forget to bring your WatchBP Home N device with you on your next visit to the doctor. (*Note: the doctor symbol is only displayed for measurements in «DIAG.» Mode.*)

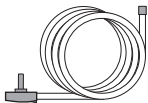


In «NOCTURNAL» mode

Change the shorter tube (20 inches) to the longer tube (40 inches) in «NOCTURNAL» mode; therefore, the cuff can be securely attached to the user's upper arm during sleep. Avoid the tube to be kinked during sleep.

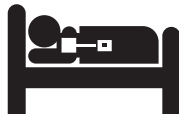


**Shorter tube (20 inches) for
«USUAL» and «DIAG.» mode**



**Longer tube (40 inches) for
«NOCTURNAL» mode**

The user should be lying supine in bed and put the device on a table by the bed.



❖ "Supine" means lying on the back or having the face upward.

Special Function

The atrial fibrillation indicator for early detection

The WatchBP Home N is designed to detect atrial fibrillation during blood pressure measurements in the «**USUAL**» Mode, «**DIAG.**» Mode and «**NOCTURNAL**» Mode. When atrial fibrillation is detected, the Afib icon displays. The device can detect atrial fibrillation with high accuracy (sensitivity of 95% and specificity of 86%)*. If the atrial fibrillation icon is displayed frequently, it is highly recommended to perform a visit to the doctor.

* Joseph Wiesel, Lorenzo Fitzig, Yehuda Herschman and Frank C. Messineo. Detection of Atrial Fibrillation Using a Modified Microlife Blood Pressure Monitor. *American Journal of Hypertension* 2009; 22, 8, 848–852. doi:10.1038/ajh.2009.98



- * Atrial fibrillation which is a major cause of stroke which can be detected by this device. However, not all risk factors for stroke, including atrial flutter, may be detected by this device.
- * This device may not detect atrial fibrillation in people with pacemakers or defibrillators. People with pacemakers or defibrillators should therefore not use this device to detect atrial fibrillation.

About Atrial Fibrillation

Atrial fibrillation is a common heart rhythm problem. It affects more than 2 million people in North America. It is more common with older age and is found in 10% of people over 80 years old. It is a common cause of stroke. About 15% of all strokes are caused by atrial fibrillation. The elderly, or those with high blood pressure, diabetes or heart disease are more likely to get a stroke if they have atrial fibrillation.

Atrial fibrillation is a rhythm problem that can last from a few minutes, to days or weeks and even years. Atrial fibrillation can cause blood clots in the upper chambers of the heart (the atria). These clots can break off and flow to the brain causing a stroke.

The use of blood thinners, such as warfarin, can lower the risk of stroke in patients with atrial fibrillation.

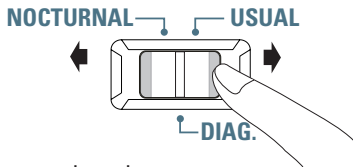
A doctor can confirm if atrial fibrillation is present by using an EKG. Sometimes Atrial fibrillation is present incidently. Therefore, a doctor may not see it on regularly scheduled visits.

One method of detecting atrial fibrillation is by mean of pulse palpitation. This method is not very reliable. Failure of detecting Afib may lead to the occurrence of stroke at the end; whereas early detection may lead to early treatment that can significantly reduce the chances of stroke.

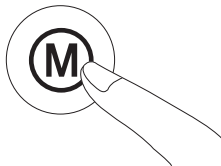
Viewing, deleting and transferring measurement readings

Viewing measurements

- 1) Use the Mode switch to first select the mode of measurements you want to view.



- 2) Then press the M button.



In «USUAL» Mode

- 1) Pressing the M button, the total number of measurements stored is displayed, e.g. N=63; the average of all measurements stored in memory is followed immediately.

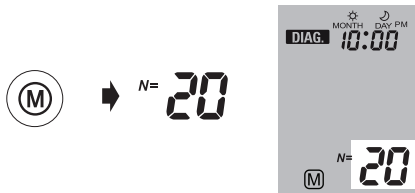


- 2) All individual readings can be viewed sequentially by pressing the M button repeatedly.



In «DIAG.» Mode

- 1) Pressing the M button, the total number of measurements stored is displayed, e.g. N=20.



❖ «A» is displayed when the number shown is the average of all data.



❖ «- -» will display when the number of measurements is less than 12.



- 2) Pressing the M button again to recall the average of all morning data.



- 3) Pressing M button once again to show the average of all evening data.

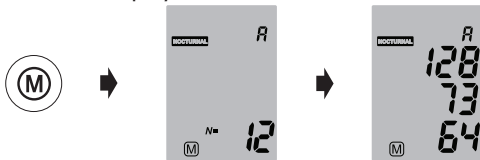


❖ All individual readings can be viewed by repeatedly pressing the M button.

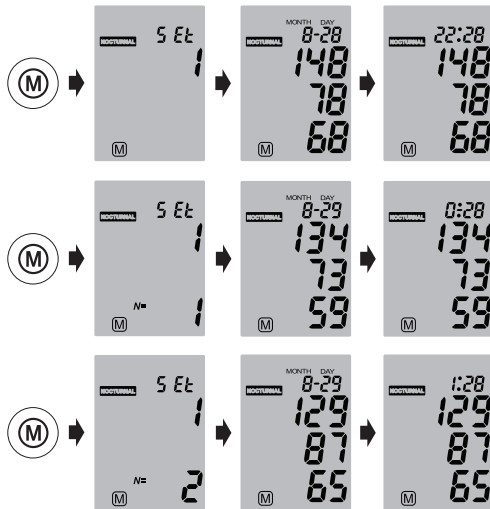
Viewing, deleting and transferring measurements (cont.)

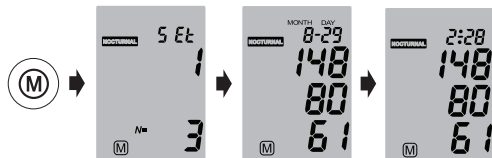
In «NOCTURNAL» Mode

- 1) Pressing the M button, the total number of measurements stored is displayed, e.g. N=12; then the averages of the measurements in «NOCTURNAL» Mode are displayed afterward.



- 2) Pressing the M button repeatedly to recall the measurements in «NOCTURNAL» Mode one by one. In each set the readings of baseline is displayed first; however, it is not calculated in average. The readings of the 1st, 2nd and 3rd are displayed consequently. The date and time are displayed alternatively.

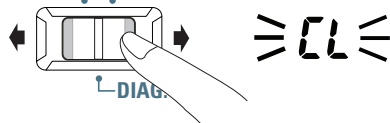




Deleting measurements

- 1) All the data in different modes can be deleted. Use the Mode switch to select the mode of measurements you want to delete.

NOCTURNAL — USUAL

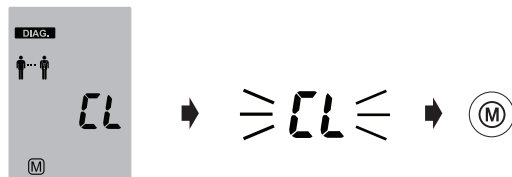


❖ Before deleting the data, be sure that the data have been downloaded or are no longer needed.

- 2) Press the M Button and hold it for 7 seconds until the delete symbol flashes.



- 3) Release the M Button and press it once more while the delete symbol flashes. The deleting is confirmed by the beep sound.



❖ Only measurements in the selected mode will be deleted. Data in different mode have to be deleted independently.

Viewing, deleting and transferring measurements (cont.)

Transferring measurements

Installation of the software program

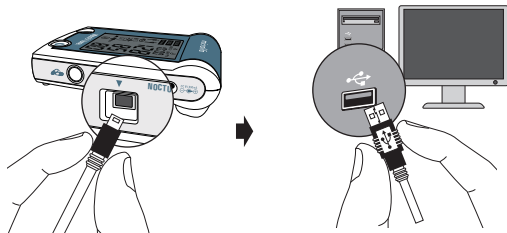
- 1) Put the CD in the CD-ROM drive of your computer.
Alternatively click on «**setup.exe**» in the CD's directory.
- 2) Follow the instructions provided in the installation window on the computer screen.
- 3) When installation is finished, be sure to restart the computer before you work with the program.



❖ *System Requirements: 550MHz CPU. 256MB Memory, 1024x768 pixel resolution, 256 color, CD-ROM drive, 1 free USB port, 40MB free hard disk space, Microsoft Windows 2000 / XP / Vista.*

Transferring data to the computer

- 1) Start the software program and connect the device to the computer using the cable supplied.
- 2) A successful connection is displayed by «**Connected**» on the computer screen.
- 3) Enter identity number, Patient Name and Patient Surname to create a new record.



Software commands	Refer to the software user manual for detailed information and instructions.
Transfer data of Diagnostic mode, Usual mode, Nocturnal mode and Medication mode to the computer	Click «Download»
Delete the memories	Click «Clear Memory»
Write Patient ID to the Device	Click «Set Patient ID»
Store data	Click «Save to excel», the file name is formed automatically as "patient's ID_WatchBPHomeN_YYYYMMDD.xls».
View the data	Click «Open file»
Version of software and user manual	Click «Help»
Close the program	Click «Exit»

❖ Please store the data before using «Clear Memory» or «Exit».

Batteries and power adaptor

Battery indicator

When the batteries have $\frac{1}{4}$ power supply left, the Battery Symbol will flash each time the device is switched on.



Replacing low batteries

When the batteries need to be replaced, the Battery Symbol will flash each time the device is switched on.

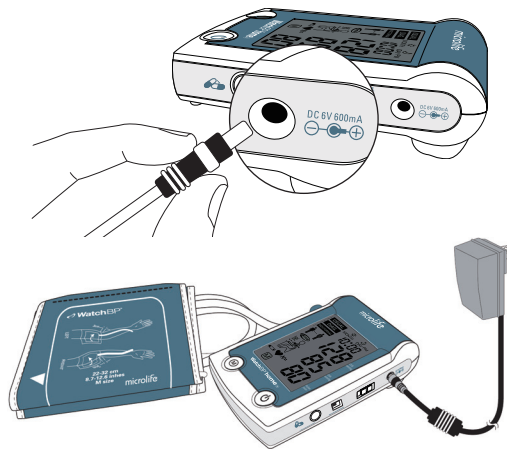
- 1) Open the battery compartment at the back of the device.
 - 2) Replace the batteries – be sure to have the correct polarity as shown by the symbols in the compartment.
- ✧ Use 4 new, long-life 1.5V, size AA batteries.
 - ✧ Do not use batteries out of date of expiration.
 - ✧ Remove batteries, if the device will not be used for a prolonged period.

Using a power adaptor

The WatchBP Home N device can also be operated using a Microlife power adaptor (DC 6V, 600mA).

- 1) Plug the adaptor cable into the Power Plug of the WatchBP Home N device.
- 2) Plug the adaptor plug into the wall socket. When the power adaptor is connected, no battery power is consumed.

- ❖ *Only use power adaptors supplied by Microlife.*
- ❖ *Caution: please use battery power under "Nocturnal mode", not AC adaptor to avoid the risk of electroshock.*



Safety, care, accuracy test and disposal

Safety and protection

This device may be used only for the purpose described in this booklet. The device comprises of sensitive components and must be treated with caution. The manufacturer cannot be held responsible for damage caused by incorrect application.



- Ensure that children do not use the device unsupervised; some parts are small enough to be swallowed.
- Only activate the pump when the cuff is installed.
- Do not use the device if you think it is damaged or if anything appears unusual.
- Read the further safety instructions in the individual sections of the instruction manual.
- Do not connect the device to a computer until prompted to do so by the computer software.

Observe the storage and operating conditions described in the “Technical specifications” section of this manual.



Protect the device from water and moisture



Protect the device from direct sunlight



Protect the device from extreme heat and cold



Avoid proximity to electromagnetic fields, such as those produced by mobile phones



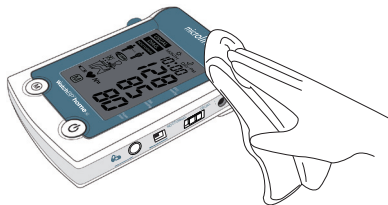
Never open device



Protect device from impact and drops

Device care

Clean the device with a soft, dry cloth.



Accuracy test

It is recommended the WatchBP Home N device be tested for accuracy every 2 years or after mechanical impact (e.g. being dropped). Please contact Microlife to arrange for an accuracy test.

Cuff care

DO NOT wash the cuff. DO NOT iron the cuff cover.



Do not wash the cuff!



Do not iron the cuff!

Disposal

Batteries and electronic instruments must be disposed of in accordance with the locally applicable regulations, and not as domestic waste.

Error messages

If an error occurs during measurement, the measurement is interrupted and an error message «Er» is displayed.



- Please consult your doctor, if this or any other problem occurs repeatedly.
- If you think the results are unusual, please read through the information in this instruction manual carefully.



Error	Description	Potential cause and remedy
«Er 1»	Signal too weak	The pulse signals on the cuff are too weak. Re-position the cuff and repeat the measurement.
«Er 2»	Error signal	During the measurement, error signals were detected by the cuff, caused for instance by movement or muscle tension. Repeat the measurement, keeping your arm still.

«Er 3»	No pressure in the cuff	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Replace the batteries if necessary. Repeat the measurement.
«Er 5»	Abnormal result	The measuring signals are inaccurate and no result can therefore be displayed. Read through the checklist for performing reliable measurements and then repeat the measurement.

«HI»	Pulse or cuff pressure too high	The pressure in the cuff is too high (over 300 mmHg) OR the pulse is too high (over 200 beats per minute). Relax for 5 minutes and repeat the measurement.
«LO»	Pulse too low	The pulse is too low (less than 40 beats per minute). Repeat the measurement.

Important facts about blood pressure and home measurements

Are home blood pressure measurements valuable?

Yes. The American Heart Association and European Society of Hypertension have demonstrated that home blood pressure measurements are important in determining accurate blood pressure.

- **Blood pressure** is the pressure of the blood flowing in the arteries generated by the pumping of the heart. Two data, the **systolic** (upper) value and the **diastolic**

(lower) value, are always measured.

- The **pulse rate** is the number of heart beats per minute.
- **Permanently high blood pressure data can damage your health and must be treated by your doctor!**
- Always discuss your home blood pressure measurement data with your doctor and tell him/her if you have noticed anything unusual or feel unsure. **Never rely on single blood pressure readings.**
- There are many causes of excessively **high blood pressure readings**. Your doctor can explain them in more detail and offer treatment where appropriate.
- Blood pressure is subject to wide fluctuations during the day, and can be influenced by emotions, physical exertion and other conditions .

Evaluating blood pressure data

The table at right classifies blood pressure data for adults in accordance to the guidelines of the European Society of Hypertension (ESH) in 2007. Data in mmHg.

The higher value is the one that determines the evaluation. Example: a readout value between **150/85** or **120/98** mmHg indicates «Grade 1 Hypertension».

Category	Systolic	Diastolic
Optimal	< 120	< 80
Normal	120 - 129	80 - 84
High normal	130 - 139	85 - 89
Grade 1 Hypertension	140 - 159	90 - 99
Grade 2 Hypertension	160 - 179	100 - 109
Grade 3 Hypertension	≥ 180	≥ 110
Isolated Systolic Hypertension	≥ 140	< 90

Technical specifications

Operating temp.:	• 10 to 40 °C (50 to 104 °F)
Storage temp.	• -20 to 55 °C (-4 to 131 °F) • 15 - 90 % relative maximum humidity
Weight:	• 385 g (including batteries)
Dimensions:	• 150 x 100 x 50 mm
Measuring procedure:	• Oscillometric, corresponding to Korotkoff
Method:	• Phase I systolic, Phase V diastolic
Measurement range:	• 30 - 280 mmHg – blood pressure • 30 - 200 beats per minute – pulse
Cuff pressure display:	• Range: 0 - 299 mmHg • Resolution: 1 mmHg • Static accuracy: pressure within ± 3 mmHg or 2% of reading > 200 mmHg • Pulse accuracy: ± 5 % of the readout value
Voltage source:	• 4 x 1.5 V Batteries; size AA • Mains adapter DC 6V, 600 mA (optional)

Reference to standards:	• Device standard: Device corresponds to the requirements of the standard for non-invasive blood pressure monitor. ANSI/AAMI SP10 IEC 60601-1 IEC 60601-1-2
Electromagnetic compatibility:	• Device fulfills the stipulations of the standard IEC 60601-1-2.



Type BF applied part

Microlife reserves the right to alter technical specifications without prior written notice.